Q
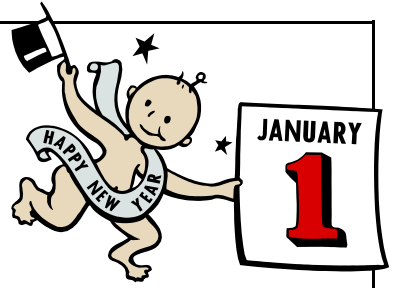
QUANTING
since
1984

QUANTA
MAGAZINE

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YES!

ISSUE 7

**Volume 28 - Issue 7
Dec/Jan 2011/12**

Information on the Association

Membership of QUANTA, the independent QL user group, is by annual subscription. The Membership Secretary can supply full details. Copies of the association's constitution & annual accounts are available from the Secretary. There is an extensive software library. There are active national subgroups. Details are given in the Member's Guide and in this magazine.

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EDITORIAL   Lee Privett

When writing the last issue's editorial I was reminded by a fellow committee member that there were 7 issues of the QUANTA magazine this year (DEC—JAN). The extra issue occurred last March when the interim Editor (also our current Chairman) had a lot of copy that would not fit in to just one issue. So we find ourselves with the traditionally last one of the year (*yes I know technically it sits across two years*) being the odd number 7.

Seven traditionally is a number which for some, holds special meanings (seven deadly sins), historical pirate accuracy! (Seven Seas), used in action titles (The Magnificent Seven) and the number of colours used in MODE 8 (*black isn't a colour*). Isn't it fitting therefore that in QUANTA's twenty-eighth year the number of issued magazines is a mathematical subdivision of those number of years and a prime number at that.

A reminder that there is still time to enter the QUANTA website competition (*see previous issues for how to do this*), the response thus far has been a disappointing, but perhaps you are all leaving it to the very last minute.

You will see that the AGM this year will be held in Manchester, although a change of venue would have been preferred, nothing south of the 'ST Albans' has been forthcoming from members, however I would like a few more members to travel to either of the two days, if only not to be the one solely with an Essex accent :).

Finally from me hoping you all had a good year in 2011 and looking forward to an even more interesting 2012, Happy New Year to all our members and families.

QUANTA NEWS   **Dilwyn Jones**

f you have QL-related news items that you'd like us to include on this page, please get in touch with News Editor - Dilwyn Jones at **news@quanta.org.uk**

QL Wanderer in 3D Re-Released

For those who fancy something different on their QL (and may well remember the original game), RWAP Software have now re-released QL Wanderer.

QL Wanderer is a mixture of a poker game, a space trading game, and an adventure, as you set off around the galaxy, travelling from planet to planet trying to collect five Aces, or 8,000 cats (the monetary unit in this system) in order to reach the all-powerful Sphinx which has kidnapped your Landlady's cat and taken it to the centre of the Galaxy. Cats can be earned by trading as you travel around the galaxy, or you may want to help out the inter-planetary poker game, by collecting and trading poker cards (hopefully gaining the Aces and jokers you need to gain entry to the Sphinx).

As you travel through space, you will come across other space ships that may be freindly or may try to shoot you down, so you need to decide whether to attack or speak with them!

The galaxy is made up of 49 sectors, containing 10 planets, 2 black holes and the Sphinx's Ark (in the centre). You will have to try and navigate your way through the black holes at some stage which is no mean feat.

All of this is displayed on the screen in Anaglyph 3D, which requires you to wear the red and blue 3D glasses supplied (you may need to adjust your monitor to get the best image).

QL Wanderer was written by Beatrice, Jean-Luc and Frederic Langlois

and originally published by Pyramide for the Sinclair QL.

QL Wanderer is available on SellMyRetro.com at £10.00 plus shipping costs – the price includes a pair of special 3D glasses!
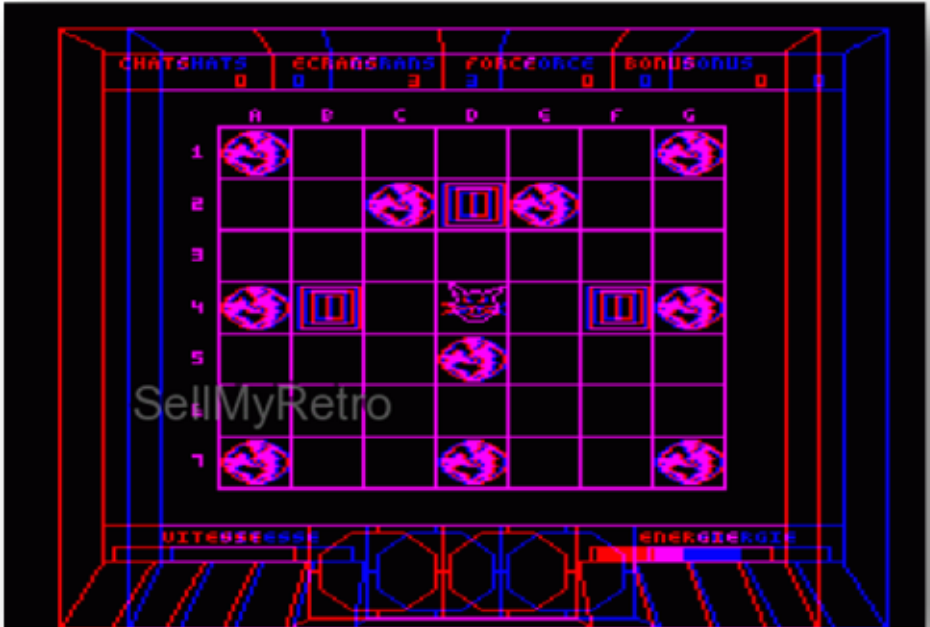
QL Wanderer sample screen – picture from SellMyRetro.com

SETW Update

*G**eorge Gwilt writes:***

SETW, which produces window definitions for TurboPTr, C and EasyPEasy has been updated to version 7.08. This allows the use of the largest possible names and directories.

 The names are used for the files produced by SETW. The directories can be set either by Config or by a parameter list. Directories can be set for such things as the output files.

Thus if a directory is set for the assembler file the output will be put both in ram1_ and in the set directory.

The program is now available on my website http://gwiltprogs.info/

SHELL Update

A drian Ives has released version 1.12 of The Shell, an interactive command processor to support the control and execution of Jobs under QDOS and SMSQ. Its primary purpose is to deliver a quick interface to the Operating System job control facilities to help developers using compiled languages such as C.

Its secondary purpose is to deliver a simple scripting facility for automated sequencing of Jobs.

The changes made by Adrian in this version include:

> Fixed a problem with matching nested pairs of brackets that incorrectly parsed expressions like $(%isfile:$(filename)).

> "set" is now a synonym of "let".

If an autoexec_bat startup command file is not found, the Shell will look for a file called autoshell_bat.

A special comment of the form #requires n.nn in a batch file will stop execution of the file if the Shell version number is less than that specified.

QStripper Update

Norman Dunbar has released an update to his Qstripper program for Windows, to allow it to work better on a Windows 7-64 bit system. The program otherwise remains the same as before. Open a Quill _doc file in Qstripper (or drag and drop a Quill _doc file to it) and it displays the content of the file. Then, using the Export menu you can save the file in other formats such as Text,PDF, HTML and docbook XML..

The updated version is available to download from my website at http://www.dilwyn.me.uk/filetran/index.html . The QT runtime DLL files are also available to download from the same page, if required.
Note that this is a Windows program, not a QL program!
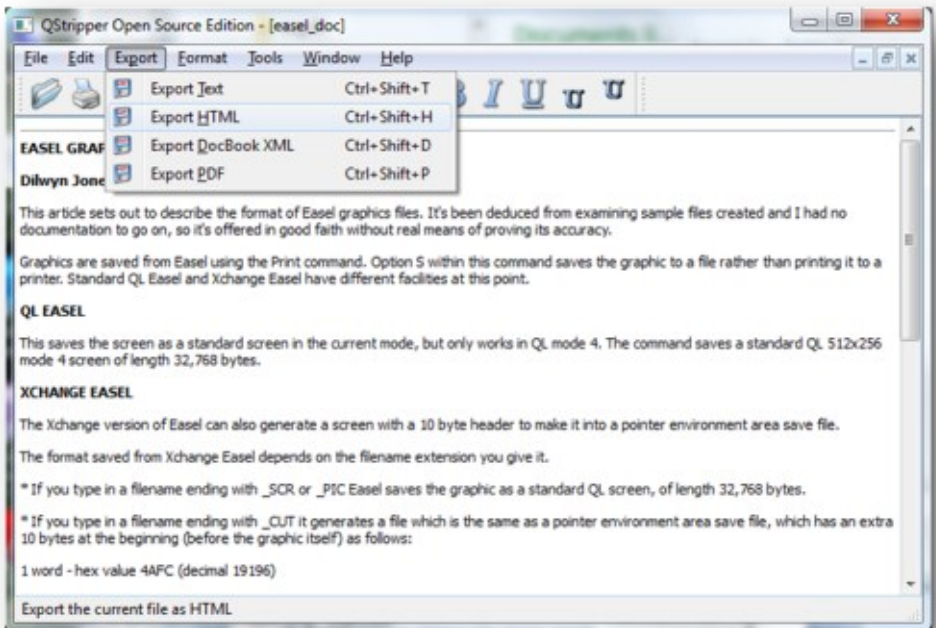
eBooks Initiative – Dilwyn Jones

Having heard from a few people who got Kindle eBook readers for Christmas (personally I got an Android tablet PC, but that's my problem) I set about learning more about these devices to see if it would be possible to make QL documentation available in suitable formats for use with these hand-held devices.

It had occurred to me that having QL reference books and so on stored on these devices (and some of them can store dozens if not hundreds of books) would have several benefits:

> Portability – take QL reading material and reference guides with you on your travels
> Fewer books needed on your bookshelf or computer desk
> Less paper – read them off screen without having to print out PDFs and document files

eReader screens are generally well presented in terms of layout and readability, and the medium sized screens and fairly light weight make them handy to keep on your desk to look up information.

Over the following few days I got a lot of help from several people to help me get going with this (Norman Dunbar, Adrian Ives and Bryan Horstmann to name but three of them – thanks guys).

With their help I quickly found the information on common file formats, file conversion software, and even some equivalent viewer programs running on a PC to see my output. It seems that the most common formats are the .ePub and .Mobi file formats, along with .azw for the Kindle (although that can read more than one format).

My first effort left a little to be desired, so I decided I was not yet ready to undertake a large manual like the QL manual, for example. Then Adrian Ives sent me a few sample files he had already converted and I learned a

QUANTA

Independent
QL Users Group

World-wide Membership is by subscription only,
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Now in our Twenty Eighth Year
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Tel. 07789 483 800
Email: membership@quanta.org.uk
http://www.quanta.org.uk

Email: membership@quanta.org.uk and ask about our special 3 Year discount

Next QUANTA Sponsored Event

Annual General Meeting 2012 And Workshop, Date: Sat/Sun 24th/25th March

Opening on Saturday at 11.00 am (Doors open 10 am for setting up),

Sunday at 10.00 am with the AGM at 2.00 pm in the afternoon.

The Venue will be in Manchester at the

3rd Davyhulme Scout Headquarters, "The Endeavour",

Conway Road, off Lostock Road, Davyhulme,

Manchester. M41 0TF. Near M60 J9.

lot from just looking at his work. Norman Dunbar provided lots of advice and Bryan Horstmann helped me by finding a Kindle Screen Reader which ran in Windows on a PC. Once I have mastered the task of converting documentation files to eBook format, I can then start looking at how to submit these manuals and QL books via eBook sites such as that on Amazon to increase the availability of information about the QL.

So in the near future I plan to make available .ePub and .Mobi versions of some QL manuals so that these can usefully and conveniently be viewed on cheap eBook devices such as the Kindle and low cost Android tablet PCs. As yet I don't know if Android phones will be able to make use of these eBook files in as useful a way, but I very much hope that making QL documentation available on these modern day platforms will be another step towards encouraging the use of the QL in its many guises!

Toolkit 2 manual viewed on my Android tablet PC

After all, if we manage to get the uQLx emulator running on a cheap RaspberryPi system for example, along with easy to access information about the QL via these new systems, it could go some way towards increasing the user base for the QL and we would all benefit as a result!

The Sinclair QL eBook

U sing the Wikipedia facility to export selected pages and articles from the encyclopedia, I have made a book about the QL with all the references to QL, Sinclair and earlier products I could find on Wikipedia. The book is released under the usual Wikipedia license terms (freely distributed on a non-profit basis).

This is rather a large publication – about 255 pages in total – and quite a large download – between 27MB and 35MB depending on which version you choose to download, and available as an ePub or Mobi format eBook. It can be downloaded from http://www.dilwyn.me.uk/docs/ebooks/index.html
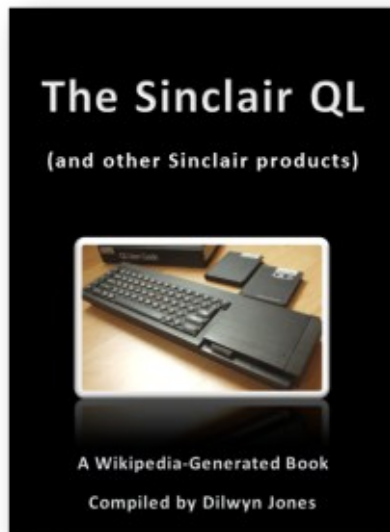
If anyone would like a copy without downloading such a large file, please send me a blank CD and return postage to get a copy on CD.

> *For those of you with good internet access and want to see what some of these files look like when downloading and viewing on a iPad, follow this link http://www.youtube.com/watch?v=_0c_u1plqcU and apologies for the shaky cam (ed.)*

Ser-USB News

Adrian Ives has written on his blog about the developments with version 2.0 of the Ser-USB drivers.

One of the most significant new changes is that the driver has now been split into two distinct versions: "Legacy" for Black Box QLs running Minerva, and "Destiny" for QL Emulators on PCs/Macs/Linux running JM to SMSQ.

The "Legacy" driver is the first version of Ser-USB that can run from a 16K ROM without the need for any overlays or the presence of a Queue Manager. It is a significant enhancement with many improvements, including the new Write As You Go map handling that massively reduces the amount of serial I/O when writing files. However, that has come at a price: Memory Lane Computing have had to take the decision that Ser-USB 2.0 Legacy will not be supported on any operating system prior to the current release of Minerva (v1.98).

The blog entry contains a summary of a letter sent to beta-testers explaining the nature of the problem and the reasons for the decision. Basically, it means that Ser-USB driver version 1.04 will be the last official version for pre-Minerva systems. Adrian also explains that "the USBWiz over Q-BUS driver does not have any of these problems because it uses the Q-BUS hardware and has no

need to use the serial driver."

And of the Q-Bus design, he writes: "Currently, a PLD design is in the process of being finalised. This will replace most of the discrete logic with a single chip, resulting in a much smaller and more efficent device. It is expected that this work will be completed by the end of February."

Read Adrian's blog at http://www.memorylanecomputing.com/blog/
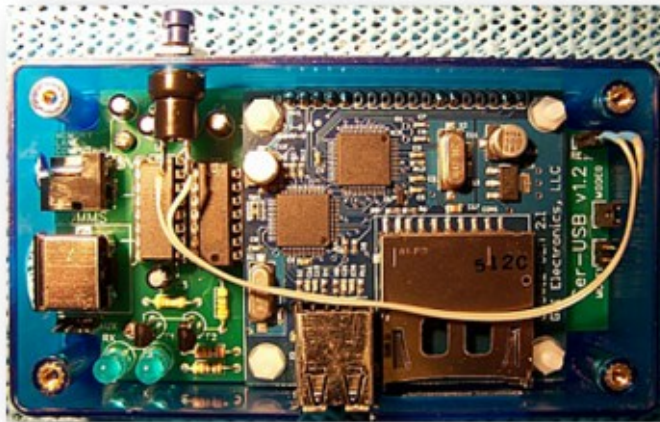
The SER-Usb unit (pictures from Memory Lane Computing website)

POINTS OF VIEW   Michael Bulford

With regards to the Aug/Sept Issue, the QL JS ROM font is very quaint and is so attractive. I would like to suggest this font could be used for small programs that can be printed out on just one page.

Now, can we please go back a year and look at Volume 27, Issue 6? On pages 37 to 41 there is a program by Steve Poole. This program is printed out in a nice heavy black ink and has many more characters to the line, which helps to avoid the spilling over of long lines. When a line does spill over, the following text gets mixed up with the line numbers of adjacent lines. But, despite this, the word-wrap provided makes the program easier to read than when viewing the same program on a QL. In short, the program texts printed out are highly readable.

I have an idea to improve upon what is already very good. When a line does spill over, there are various options to consider. The line could be condensed by removing spaces, and in this case there has to be several ways this could be done. If the line cannot be condensed to fit, then word-wrap would take place, and again, there has to be several ways this could be achieved. The possibilities are wide open.

A competition could be organised for Quanta members, the task of which, would be to provide a program to covert an existing program text file into another one, but which would print out nicely. Who will provide the best solution? I would suggest no monitory prize be offered, but just that the winner would have the pleasure of seeing there program published in the magazine.

Kind regards

> *If you have any comment on this or on any other QL related subject then please write to the Editor, address at the front of the magazine (ed.)*

POLITE NOTICE   The Editor

Q UANTA can only continue with its members (and others) help, we need your input *however small*, to contribute, whether a program listing showing your work, an experience with some related hardware or a review of a game or application you feel would benefit members.

If you have something you think is of interest then please let us know, as ever by the usual email to the editor@quanta.org.uk or by snail mail (address elsewhere in this magazine) and see the back page for further inspiration.

RASPBERRY PI UPDATE   Lee Privett

W hat's all the fuss over this Raspberry Pi I hear you ask, well just to recap and link it to the '*QL Users And Tinkerers Association'* ahem!

The Raspberry Pi foundation is a charitable status organisation that has specific and firm beliefs at the forefront of what it is trying to do.
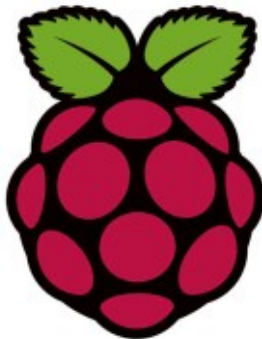
Raspberry Pi logo (Courtesy of the Raspberry Pi foundation)

Firstly is that relevantly computer experienced (not qualified) youngsters, that are needed for the next generation of entrepreneurs to move the computer scene foreword, are conspicuous by their absence. Those with ICT qualifications know how to use 'Office' based systems and the typical software that is used, but very little about the actualities of extending a computer. Tinkering with the hardware, adding something to it that is home grown, to do something over and above what it already does when switched on (does that sound familiar?).

Secondly there is a world wide restrictive practice of 'enclosed systems and architecture' used in computer game consoles, PCs, tablets and

similar devices and even smart phones that do little but allow people to play with them, 'maybe a bit of restrictive programming in C++' but little else. Additionally these devices cost a lot of money and so limit the access even further to people who can ill afford to but these devices, or even if they could, would be conscious of it being too easily stolen as it is a valuable commodity.

Now there are computer based systems on circuit boards that are already available, but these have limiting features and cost around £100+ or even more. They also come with a load of features that the user may or may not ever use.

The founders of the Raspberry Pi are keen to generate the next wave, or at least seed the foundations (no pun intended) of getting 1000s if not more, young people enthused about 'proper' computing. To provide the building blocks or a basic bare bones system to people keen to get the computer to do something you want it to do and not what it will allow you to do (does that sound familiar?).

The price point for the RasPi (as it tends to be called on the forums) is crucial, the $25 dollar being an ideal maxim for the American market works out to about £16 pounds here in the UK and I say this with some trepidation €19.40 (correct at 05/01/12).

Every component on the board shown in the picture has been picked with consideration to its price, even having a few cents difference on each component adds up and if you're not careful you exceed your budget. By paying this level of attention to how the board is made and what it contains, ensures that the overall cost remains within the pricing target.

This does mean that some things cannot be incorporated on the standard board, especially if they can be added on as a USB device. So what you won't find on there is a specific keyboard or mouse socket, neither will the base system have WiFi or a LAN port although the

dearer Model 'B' will have slightly more memory and the LAN connection. There are two models currently referred to as Model A (base model $25) and 'more stuff specified' Model B ($35) influenced I think and following in the fond memories of the BBC Microcomputer whose first two versions were also named.

(Courtesy of the Raspberry Pi foundation)

When the Sinclair QL was first released to the public it wasn't ready and to its cost and some say its ultimate downfall. As our members will already know, not without a multitude of hardware and software being attached to it (even to this day).

The QL and its hardware based derivatives have not been manufactured for some years now, although there are still some who are providing us with some interesting developments. Spare parts are almost non existent and QL software emulators are expected to be the only way forward in the preservation of both the operating system and the simply fantastic S*BASIC.

QL emulators are available for a range of operating systems today,

http://qlforum.co.uk

A Place for Sinclair QL Users to Meet!
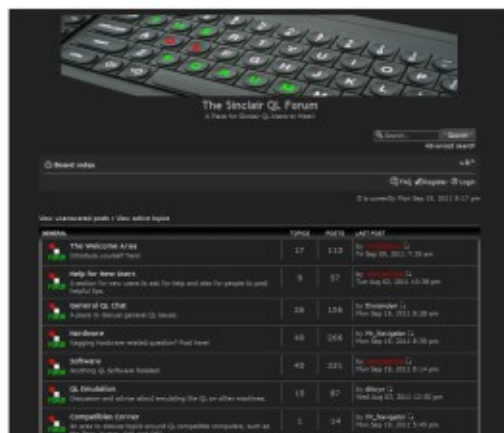
THE QL FORUM is an informal online community for talking about all things QL.

Join in and get involved!

however the hardware to run them hasn't really changed (sure they have got bigger and faster, but not substantially cheaper). At best you could pick up a PC Windows based system for around £400 or a slightly cheaper net-book with a tiny screen, add the QL emulator and you have your 2 Gigabyte bloated system running a QL.

A computer system with 128M of RAM when the original QL only needed 128K to run sounds extremely promising and more than enough memory, add HDMI output for a simple direct connection to a high quality TV display. With USB connectivity and a quick access to a powerful procedural BASIC at a very reasonable cost, what more could you want to shake a stick at?

The Raspberry Pi device sounds like a hobbyist dream being adaptable to whatever you want to use it for; you only add peripherals to it if you need them, when you need them. For output it has composite video and audio sockets being most compatible with televisions set (old) and HDMI being most compatible with television sets (new).

Some people have investigated using the Raspberry Pi boards with the motor vehicle small screen reversing displays found on eBay, as these can be picked up for around £20 (it does depend what you want to use it for).

This device will be able run Linux as a basic setup, which means you should be able to boot up uQLx once configured or you can run WINE under Linux and then QemuLator (Windows™ version) or even QPC2. Those who know more about Linux I am hoping will come forth with the methods in which to achieve this, I am not that familiar with the history or the system.
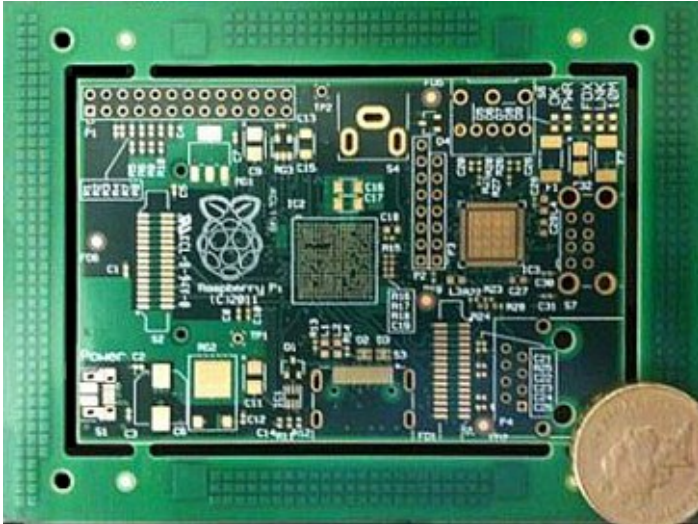
(Courtesy of the Raspberry Pi foundation)

The advantage being is that for the sum of £16 for the board, £7 for a USB mouse, £10 for a basic USB keyboard and relevant OS, emulation software you can have a completely new, complete solid state QL based system for under £40. Cheaper than any laptop or PC and all you need is a case to put it in, for my money one of the first attempts will be to put it in an original QL black box just for the hell of it.

The board comes with GPIO (general purpose input/output to you and me) pins allowing controllable data in and out of the board, although it is not clear how that is achieved yet. This little board is already in production and the first few have appeared on eBay to be snapped up by extremely keen enthusiasts. By the time you read this article the first Raspberry Pi boards in mass production should readily be available from their website http://www.raspberrypi.org/ or their web store http://www.raspberrypi.com/.

QUANTA HELPLINE   Dilwyn Jones

O ccasionally we get a question on the helpline that proves difficult even for the QUANTA seasoned veterans, however there is always a way…(ed.)

Q) Please give the procedure for converting Abacus files under Psion 4 (DOS) to Abacus files running on QL (QDOS) and QPC2.

A) I wasn't sure of the answer to this one so I asked for help on the QL users mailing list and the following people contributed suggested answers, to whom I am very grateful.

Bryan Horstmann:
As I understand it the Export command will only transfer the data, not the formulae. I was told long ago to zip the file, change format and then unzip but I haven't actually done that myself.

François Van Emelen:
Yes, only data can be transfered.
I use F(files) T(transfer) S(save) D(for 'dif' files) R(by rows).
On the QL I use the same method (S(save is of course replaced the L(load))

Bob Spelten:
Xchange for PC and QL both have the Transfer command (F3/ Files), for moving data between Abacus's on different machines. This process can keep formula & data intact, unlike export. The help pages don't mention the "other" system but it should be worth a try. If Psion 4 doesn't have this option, an upgrade to Xchange may be needed.

Dave Walker:

My TexTidy software can be used to convert files between the DOS and QDOS Abacus formats. This then needs to be used with appropriate transfer software (e.g. DiscOver) to get the files from QDOS to DOS if not running an emulator that can do this directly.

Timothy Swenson:

I finally got around to testing this. I created a test spreadsheet using the Psion Abacus for DOS. I saved the file as a transfer file (.abt). Changed the extension to _abt, and moved it onto a directory that Q-emulator has access to. I got into Xchange and Abacus. I loaded the file via the transfer option (as type Psion not dif) and the spreadsheet loaded up just fine. The formulas were retained. Just for the record, I use DOSbox to run the DOS version of Abacus.

Using Atari-Style Joysticks With The QL

A tari style joysticks are compatible with the QL, but have a different connector to the British-style 6 pin connector (the UK QL CTL port connectors are part number BS6312 type 630W, which look fairly similar to UK telephone connectors, but are not compatible since the latching pins are different size and different side, for example).

By making up a CTL port 6 pin to 9 pin D adaptor lead you can plug an Atari-style switched joystick into a QL CTL1 or CTL2 socket. You will need a 6 way cable to join them up. The pin numbers are as follows.

```
-----------------------------------------------
  FUNCTION                 QL      JOYSTICK
-----------------------------------------------
  Joystick 1 common line  1          8
  left                    2          3
  right                   3          4
  down                    4          2
  up                      5          1
  fire button             6          6
-----------------------------------------------
```

Some joysticks have the following extra lines which cannot be directly used with the QL, so leave them unconnected.

pin 9 = joystick 2 common line (dual joysticks)
pin 7 = +5 volts (on some computers only)
pin 5 = 0 volts (on some only)

On the QL CTL sockets, pin 1 is nearest to the latching pin on the plug as it is inserted:

QL 6-way CTL connector (joystick port)

6-way flat cable
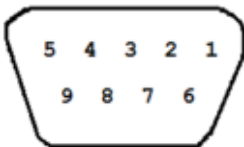
Joystick 9 pin D male connector (viewed from back of plug, i.e. looking at solder pins)

Here is a photo of what my joystick adaptor lead looks like:
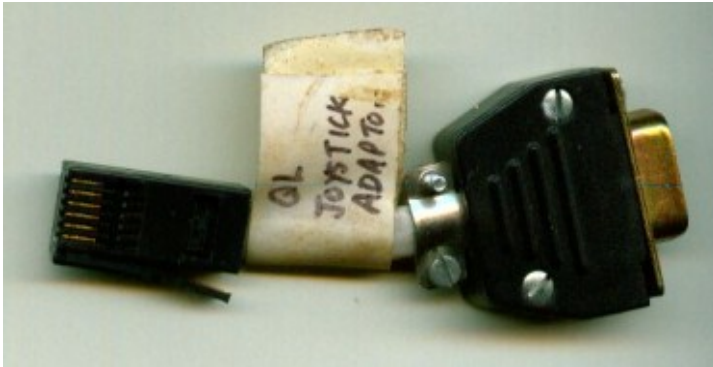
TIME & TIME AGAIN   Lee Privett

W hile observing a member of staff at work in their teaching role, I noted that he used a website based countdown clock when setting a ten minute activity for the students http://www.online-stopwatch.com/full-screen-stopwatch/, I thought at the time, this should be a simple thing to do on the QL and at my first opportunity I set about doing just that. I initially thought this would be a straight forward process, the procedure PAUSE within a for next loop should suffice, so my first attempt was as follows.

```
100 Countdown 10
110 :
120 :
130  DEFine PROCedure Countdown(St)
140    REM this counts from 1 to 10
150    REM using a pause statement at 1 second
intervals
160     FOR f =1 to St
```

```
170        PAUSE 1
180        CSIZE 3,1
190         AT 5,5
200         PRINT St-f
210     END FOR f
220   END DEFine Countdown
230 :
```

When this program is run the results are far from satisfactory as not only did the whole routine rely on no keys being pushed thus shortening the time, but also no other operations could be employed as the PAUSE command suspends operations. Additionally the actual timing didn't feel like accurate seconds and there were also slight variations when trying the routine at different QL speeds i.e. original QL speed, Gold Card speed and full speed (Qemulator users will understand that point).

The next bit of programming was to try and extract the QL's timing from the DATE command, however this proved a little more difficult as the maximum number held by the DATE command with a minimum change appears to be 'seconds', but at least it was seconds. So the following procedure was written, incorporating a lot of forced integers as I had intended to Turbo it afterwards.

```
100 :
110 Countdown 10
120 :
130   DEFine PROCedure Countdown(StNm%)
140    LOCal one% : zero%=0
150    zero%=0 : one%=1
160     FOR f% = StNm% TO zero% STEP -one%
170        StartTime=DATE
```

```
173        REMark =============================
177        REMark this bit tests for each second
179        REMark =============================
180         REPeat loop
190          Difference=DATE-StartTime
200           IF Difference=1 THEN EXIT loop: END IF
210         END REPeat loop
220        CSIZE 3,1:AT 5,5:PRINT f%;" "
230      END FOR f%
240   END DEFine Countdown
250 :
```

This time the routine for-next loop counts down for the parameter passed
to it. Line 190 gets the difference between the initial start time and the
current time, once this difference = one second, the count is printed and
then the whole process starts again, incrementing down by one.

Again not that successful as there was too much delay in the process
starting, once typing run, and too many calculations did slow it down a bit
at QL speed. Having enlisted some help on the QL Forum about the use
of Floating Point numbers, wanting to extract sub-decimal numbers I
found the DATE command wasn't going to help and therefore too
limiting, but with the best intentions I set about a more efficient method
still incorporating it.

With that in mind my final attempt below sets up the screen and adjusts
for QPC2 ROM, the calculations I have kept to the barest minimum.
When used on different systems and speeds there seems to be very little
noticeable difference between them. I do feel however this is my best
effort so far, still with a couple of niggles with regards to overall timing
but as with most things QL, if you can improve on my efforts please do

write in and let us know.

```
100 REMark Clock test
110 :
120 WINDOW 512, 240, 0, 0
130 IF VER$='HBA' THEN COLOUR_QL
140 MODE 8
150 PAPER 1:INK 6:CLS
160 :
170 Countdown 10
180 :
190  DEFine PROCedure Countdown(st)
200     CSIZE 3,1
210     StartTime=DATE
220     FOR f = 0 TO st
230       AT 5,5:PRINT st-f;" "
240         REPeat loop
250          IF DATE>=(StartTime+f) THEN EXIT loop:
END IF
260         END REPeat loop
270     END FOR f
280  END DEFine Countdown
290 :
300 :
310 DEFine PROCedure s
320  SAVE_O win1_CountDown03
330 END DEFine
```

NIGHT NURSE REVIEW   Peter Scott

With the Christmas holidays seeming like a hazy memory and a return to work a depressing shock to the system, Night Nurse is an ideal game to bring a bit of cheer to an otherwise gloomy January. Originally released in 1985 by Shadow/Talent, Night nurse is a tongue in cheek maze game set in the hopefully fictional hospital of St Spooks.

The goal of the game is to discover the entrance to the hospital staff party while finding something suitable to wear on the way. Meanwhile ghosts, monsters and a wonderfully animated flashing randy doctor (no I haven't been drinking, well maybe just a little) give chase draining your stamina.

To help you on your quest some rooms have random items which have special effects on the hospitals inhabitants. Part of the gameplay is experimenting to see which item works best on which monster. For example the syringe stops the floating head monster in his tracks, while

the nutcrackers(!) make short work of the flashing randy doctor (I kid you not)

Originally a superbasic game, RWAP have made a few updates to improve the games speed. The graphics are quite simple but the animations are the real star with some charming characters. The sound is standard QL fare with some warbly sounds used for the monsters. Controls are simple with the cursor keys used for up, down, left, right. The only technical issue is stated in the manual with the game needing a res_128 command before it will run on expanded QLs.

Night Nurse is a simple game to play with easy gameplay but the classic cheeky carry-on styling make it fun to play and well worth a look. Night Nurse is available for £5 from RWAP Software.

SPEEDING UP SORTING ROUTINES   Dilwyn Jones

’ve corresponded a lot with Steve Poole over the last few months regarding his Tally Sort routines, which provide fast sorting for integers (see Helpline article in Quanta magazine April/May 2011 and Tally Oh! In August/Sept 2011 and Oct/Nov 2011).

During these discussions, Steve happened to mention a type of sorting routine I hadn't come across before, called an ABC sort (ABC standing for Allen Beechick's Character sort). This patented sort is claimed to be linear in terms of speed as the array size grows. Further details at http://www.beechick-sort.bizhosting.com/

Most sorting routines take progressively longer to sort the bigger the array gets – exponentially, in fact. With traditional sorting routines, sorting small amounts of data is quite efficient, even with simpler sorting techniques such as Bubble, Insertion and Exchange sorts.

But the sorts rapidly get less and less efficient as the array size grows – plot a graph of time taken versus array size and you'll see that it is not a straight line as the number of items to sort gets bigger, far from it, it's a line which curves ever more steeply upward – sorting twice as much data takes much more than twice the time!

You can see this in the Easel graph of figure 1. This is a 3D graph, where the speed of the three traditional sorts (Bubble, Insertion and Exchange) are plotted as the back three graph rows of data. You'll see

that the graph shows ever increasing sort times (vertical axis) as the amount of data increases (horizontal axis). Whereas the front three graphs show a much more modest increase in sort time right up to an array of 30,000 text times, close to the limit of string arrays in SuperBASIC, about 32K of strings.

I haven't studied the ABC (Beechick) sort in detail – I'll leave clever code like that to clever people like Steve Poole! You can get sample code routines at http://www.beechick-sort.bizhosting.com/abcsort.html if you'd like to try to develop a QL version. I quickly realised that in the time available to me, I'd never understand the code!

But some comments in the article did give me food for thought as to how to develop a new way (as far as I was concerned – I'm not saying it's never been done before!) to speed up the simple traditional sorts.

The approach I've taken is that of splitting the arrays into manageable sized sections, on the basis that sorting small amounts of data is much more efficient with these simple sorting routines. Most approaches to speeding up simple sorts rely on smalling small subsets, then merging the sorted little groups of data. The approach I've taken is fairly simple in concept, but a little more difficult to program.

The idea is to copy the data into an identical array and set up index tables as you go along. All the entries starting with A are copied first, the index table tells us where the A group starts in the array copy, and how many entries start with A. Then we do the same with B, and so on. We can extend this to numbers and non-alphanumeric characters too, but for most text sorting purposes sorting as 26 groups (A to Z) and a 27th (non-text) will be adequate.

What we then do is set up to sort those starting with A first, then those starting with B and so on until our list is finished. Now you have a second copy of the array in sorted order, which makes it very memory intensive but at least you have a sorted and unsorted copy, so you can 'undo' the sorting later if required.

The SuperBASIC listing which follows is generously documented with loads of REMark statements, which is what makes it so long but hopefully fairly easy to follow.

Timings are built into the program, so you can see how the routines work with different amounts of data and of course compare how the Index Table sorting compares with traditional sorting. The program asks how many items you'd like to sort.

There is of course an overhead in terms of creating and calculating the index tables. This makes it slightly less efficient with small amounts of data (no real time saving with small arrays) but since the routines show the time taken to both calculate the index tables and sort separately, you get an idea of where the efficiency cuts in, as you will from the graph of figure 1.

Comments and suggestions as to how to develop this code welcome, and everyone is welcome to use the code and concept freely and without restriction.

The listing is pretty long, so if anyone wants a copy emailed to save typing it in, please let me know. I will endeavour to put it on the Quanta website to allow members to download it from there.
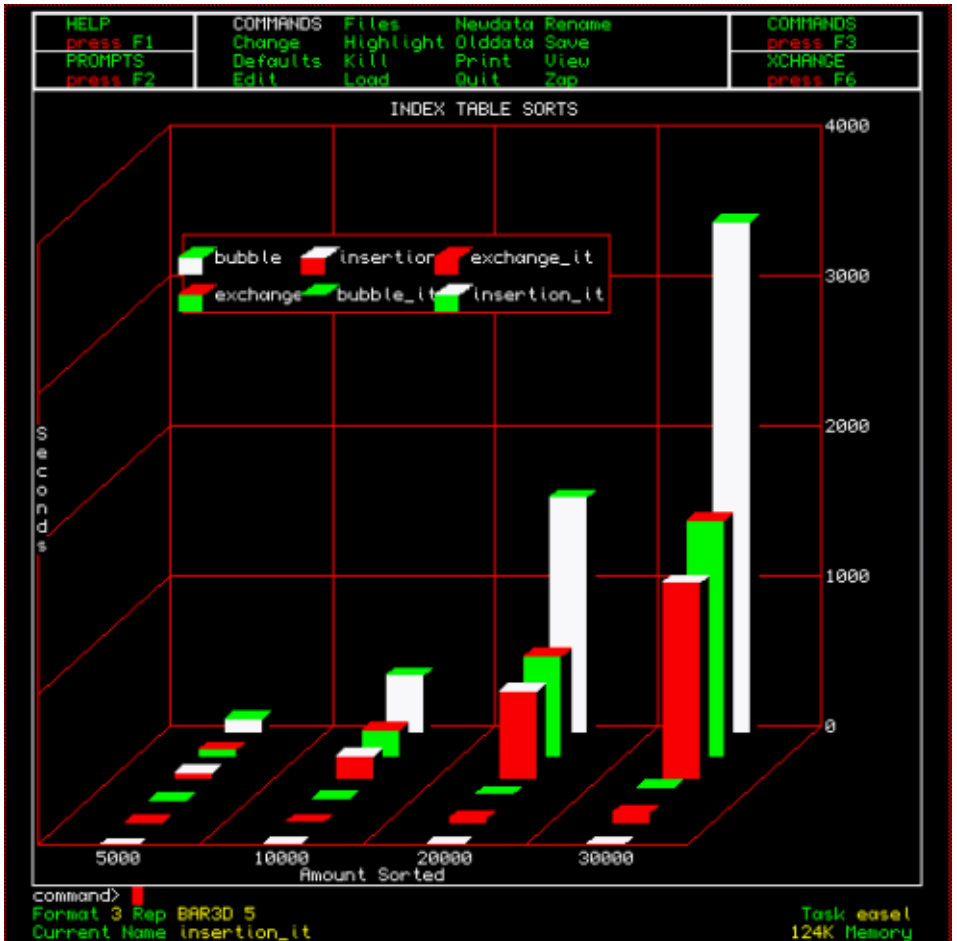
Figure 1 – Easel graph of sorting times with traditional sorting routines

```
100 REMark Index Table Sorts
110 REMark Compare traditional versions of Bubble,
Exchange and Insert
120 REMark sorts with index tables to group the data
into letter groups
```

```
130 REMark to speed up sorting - smaller sort sets are
more efficient
140 REMark than trying to sort huge arrays with these
types of sorts
150 :
160 CLS : CLS #0
170 PRINT'COMPARISON OF BASIC SORTS WITH AND WITHOUT
INDEX TABLES'
180 INPUT 'How many entries > ';max_entries% : REMark
how many items to sort
190 :
200 FOR sort_type = 1 TO 3
210   PRINT : REMark blank line between all three sorts
results
220   SELect ON sort_type
230     =1 : PRINT'Setting Up INSERTION SORT Arrays
(';max_entries%;' items)...'
240     =2 : PRINT'Setting Up BUBBLE SORT Arrays
(';max_entries%;' items)...'
250     =3 : PRINT'Setting Up EXCHANGE SORT Arrays
(';max_entries%;' items)...'
260   END SELect
270   Setup_Arrays
280   :
290   REMark First do a timed traditional Insertion/
Bubble/Exchange sort
300   REMark the original (traditional) sorts work on
txt1$()
310   PRINT'Sorting without index tables... ';
320   time1 = DATE : REMark time how long traditional
sort took
330   SELect ON sort_type
```

```
340     =1 : INSERTION_SORT txt1$,0,max_entries%-1
350     =2 : BUBBLE_SORT    txt1$,0,max_entries%-1
360     =3 : EXCHANGE_SORT  txt1$,0,max_entries%-1
370   END SELect
380   PRINT'Time taken=';DATE-time1 : REMark how long
did traditional sort take
390   :
400   REMark pre-sort grouping of array entries starting
with same
410   REMark character into second array txt2$(). This
places the strings
420   REMark starting with non-alpha characters AFTER
the ones starting
430   REMark with text, i.e.
ABCD...XYZ...0123...symbols...etc
440   PRINT'Building Index Table And Pre-Grouped Copy of
Array...'
450   time2a = DATE : REMark time started building index
tables
460   :
470   DIM indextable%(1,26)
480   index_no% = 0 : REMark count how far we've gone in
the copy array
490   :
500   REMark create pre-grouped array of strings
starting with text
510   REMark CODEs 65 to 90 are upper case letter CODEs
but we check
520   REMark for lower case codes too
530   FOR a = 65 TO 90
```

```
540      indextable%(0,a-65) = index_no% : REMark where
this letter group starts in pre-grouped array copy
550      FOR b = 0 TO max_entries%-1
560        IF CODE(txt1$(b)) = a OR CODE(txt1$(b)) =
(a+32) THEN
570          REMark either upper or lower case matched
580          txt2$(index_no%) = txt1
$(b)                 : REMark copy to the pre-group
array
590          indextable%(1,a-65) = indextable%(1,a-65)
+1 : REMark add 1 to number of entries in this CODE
group
600          index_no% = index_no%
+1                   : REMark next free slot in copy
array
610        END IF
620      END FOR b
630    END FOR a
640    :
650    REMark non-alphabetical group (expand as required
- this check for
660    REMark ALL non-alpha first characters_
670    indextable%(0,26) = index_no% : REMark txt2$() non
-alpha starts here
680    FOR b = 0 TO max_entries%-1
690      cde% = CODE(txt1$(b))
700      IF cde% < 65 OR (cde% > 90 AND cde% < 97) OR
cde% > 122 THEN
710        REMark anything other than a letter code
720        REMark could use SEL ON cde%=0 to 64,91 to
96,123 to 255
```

RWAP Software
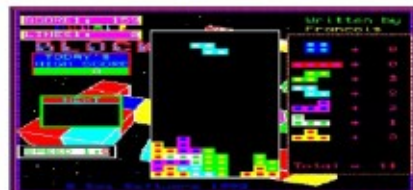
Vroom by Pyramide

E.V.A by Westway

Mortville Manor by Pyramide

Double Block by Francois Lanciault

Night Nurse by Microdeal

```
730       REMark instead of the IF...THEN here
740       txt2$(index_no%) = txt1$(b)          :
REMark copy to next free slot
750       indextable%(1,26) = indextable%(1,26)+1 :
REMark one more in this CODE group
760       index_no% = index_no%+1               :
REMark next free slot in copy array
770     END IF
780   END FOR b
790   REMark how long did it take to build the index
tables?
800   PRINT'Index built in ';DATE-time2a;' seconds'
810   :
820   time2b = DATE : REMark time we started sorting the
groups
830   PRINT'Sorting 27 character group indexes...';
840   FOR a = 0 TO 26
850     REMark index sort each section of the array
860     PRINT !a! : REMark display of group sorting
progress
870     IF indextable%(1,a) > 0 THEN
880       REMark there actually is something to sort in
this group
890       REMark technically should be IF ... > 1 THEN
but ">0" is
900       REMark handy for testing
910       SELect ON sort_type
920         =1 : INSERTION_SORT txt2$,indextable%
(0,a),indextable%(0,a)+indextable%(1,a)-1
```

```
930        =2 : BUBBLE_SORT    txt2$,indextable%
(0,a),indextable%(0,a)+indextable%(1,a)-1
940        =3 : EXCHANGE_SORT  txt2$,indextable%
(0,a),indextable%(0,a)+indextable%(1,a)-1
950      END SELect
960     END IF
970   END FOR a
980   :
990   REMark display how long it took to sort the groups
1000   PRINT
1010   PRINT'Sorted in ';DATE-time2b;' seconds'
1020   :
1030   REMark display how long it took to generate index
tables plus
1040   REMark sort the array
1050   PRINT'Total time (Building Index Table+Sorting)
=';DATE-time2a
1060 END FOR sort_type
1070 STOP
1080 :
1090 DEFine PROCedure Setup_Arrays
1100   REMark Generate two identical arrays for
comparing sort speeds
1110   REMark   txt1$() will be used for the traditional
sort versions
1120   REMark   txt2$() used for the index table sort
versions
1130   DIM txt1$(max_entries%-1,10),txt2$(max_entries%-
1,10)
1140   FOR a = 0 TO max_entries%-1
```

```
1150     FOR b = 1 TO 10
1160        txt1$(a) = txt1$(a)&CHR$(RND(65 TO 90)) :
REMark random letters
1170     END FOR b
1180     txt2$(a) = txt1$(a) : REMark copy of original
array for sorting
1190   END FOR a
1200 END DEFine Setup_Arrays
1210 :
1220 DEFine PROCedure EXCHANGE_SORT (array,low%,high%)
1230   REMark array is the string array to be sorted
1240   REMark (untested with numeric array yet)
1250   REMark low% is position in array at which sorting
starts
1260   REMark high% is position in array at which
sorting ends
1270   REMark allow sections of arrays to be sorted
1280   REMark Same applies to the other two sorts
1290   LOCal index,findlow,lowest%,temp$
1300   IF high% < 1 OR (high%-low%) < 1 THEN RETurn
1310   FOR index = low% TO high%-1
1320     lowest% = index
1330     FOR findlow = index+1 TO high%
1340        IF array(findlow) < array(lowest%) THEN
lowest% = findlow
1350     END FOR findlow
1360     temp$ = array(lowest%)
1370     array(lowest%) = array(index)
1380     array(index) = temp$
1390   END FOR index
```

```
1400 END DEFine EXCHANGE_SORT
1410 :
1420 DEFine PROCedure BUBBLE_SORT (array,low%,high%)
1430   LOCal last,index,temp$,highest%
1440   IF high% < 1 OR (high%-low%) < 1 THEN RETurn
1450   FOR last = high% TO low%+1 STEP -1
1460     FOR index = low%+1 TO last
1470       IF array(index) < array(index-1) THEN
1480         temp$ = array(index)
1490         array(index) = array(index-1)
1500         array(index-1) = temp$
1510       END IF
1520     END FOR index
1530   END FOR last
1540 END DEFine BUBBLE_SORT
1550 :
1560 DEFine PROCedure INSERTION_SORT (array,low%,high%)
1570   LOCal index,down,highest%,temp$
1580   IF high% < 1 OR (high%-low%) < 1 THEN RETurn
1590   FOR index = low%+1 TO high%
1600     temp$ = array(index)
1610     FOR down = index-1 TO low% STEP -1
1620       IF temp$ >= array(down) THEN array(down+1) =
temp$ : EXIT down
1630       array(down+1) = array(down)
1640     NEXT down
1650       array(0) = temp$
1660     END FOR down
1670   END FOR index
1680 END DEFine INSERTION_SORT
```

```
COMPARISON OF BASIC SORTS WITH AND WITHOUT INDEX TABLES
How many entries > 1000

Setting Up INSERTION SORT Arrays (1000 items)...
Sorting without index tables... Time taken=1
Building Index Table And Pre-Grouped Copy of Array...
Index built in 1 seconds
Sorting 27 character group indexes... 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
15 16 17 18 19 20 21 22 23 24 25 26
Sorted in 0 seconds
Total time (Building Index Table+Sorting)=1

Setting Up BUBBLE SORT Arrays (1000 items)...
Sorting without index tables...
```

MEMBER'S COMMENTS   Keith Dunbar

The following comment from a QUANTA member was found on the back of his Subscription Renewal Form:-

"Thanks to you and all the committee for the continued work you are doing. I joined QUANTA in 1986 and even at the new [subscription] rate think it is fantastic value. I still use my Black QL a bit and QPC2 as well of course."

Comments from members thanking committee members for their work are quite frequent from one source or another and the committee are very grateful for such comments. All we [committee members] have to do now is to continue to live up to the member's expectations as best they can.

On behalf of all the committee members, THANKS!

QL Today Subscription

We at QL Today are moving into our 16th year! The upcoming issue 1 of Volume 16 will come with a DVD (included in the price) containing all previous issues of QL Today in PDF format - from Volume 1 to Volume 16, English and German (as long as German ones were produced). Don't miss it - by subscribing for Volume 16, you get 15 complete Volumes from the past to read as well!

You can subscribe by using this form (or a copy of it), or subscribe online via www.QLToday.com (the form can be downloaded), by email, letter, fax etc. ... we are flexible!

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Issue 2 will be released in December - jam-packed with interesting articles like "Making the most out of the DVD..." by Urs König

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SUBGROUP MEETINGS

Sub group meetings are where QUANTA members and non-QUANTA members get together to discus, tinker and explore all things QL related. If there is a subgroup near you then why not pop along and see what's happening, you never know there may be something you could help with or a problem that you know the answer to. If there is not a sub-group near you why not hold one yourself? (Ed.)

——————————————————-

THE WEST MIDLANDS QL USER GROUP

The meeting place is called the Bull, the address is 1 Price Street, Birmingham, B4 6JU. It is approximately 7 minutes walk from Snow Hill main-line railway station and has ample street parking nearby. Meetings remain open to QUANTA members and non-members alike.

After your first meeting you're expected to pay £1 each time towards the organisation and monthly newsletter costs - except once a year when the group pays all those who attend a pound instead ;-)

We provide food twice a year for those who attend the AGM and the group's birthday party) and at meetings we discuss all sorts of things, QL -related and otherwise, usually from about 8:20pm onwards till 10:30 or later. The group owns QL hardware, a disk library and subscribes to relevant magazines. People can join the mailing list for £3.50 per year, even if they can't attend regularly.

Meetings: Meetings are usually on the first and third Monday of each month (but not on bank holidays unless the previous one was cancelled for that reason).
Contact: The contact number remains Mike Bedford White's, on 0121 605 4438, anytime after 11am.
Email: mikebwhite@blueyonder.co.uk

——————————————————-

QUANTA DORSET SUBGROUP – Dorset

Meetings are held, on the second Sunday of each month between 2.00pm and 5.00pm. For location please contact: John Penn-Simkins - 01202 422491 or John Mason - 01425 275894

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LONDON QL AND QUANTA GROUP

Meetings are held in the School Room, which is the basement of the Borough Welsh Congregational Chapel, 90, Southwark Bridge Road, London SE1. This is almost opposite the junction with Marshalsea Road, at the other end of which, 5 minutes walk away, is the Borough Underground Station. Free parking is easily available in Southwark Bridge Road for road users, Cyclists are welcome. Members currently each pay a subscription of £40 per year towards the cost of the hire of the hall and a small additional charge is made for tea/coffee - biscuits are then provided free.

Please bring your QL equipment if possible, all types welcome, e.g., PC portable running emulators. The Group has some systems stored at the venue for its use. In addition, there are lots of donated second user equipment, books, magazines, etc., available for purchase. Time: 2.00 pm. to 5.00 pm., on the second Sunday of the month. No meetings are held in December / January - winter break, or July / August –the summer break, giving 8 meetings a year. Malcolm Cadman - 020 8691 5780 Email: QL@mcad.demon.co.uk

————————————————-

NEMQLUG - THE NORTH EAST MANCHESTER QL USER GROUP

Meetings are held at 181, Urmston Lane, Stretford, Manchester. M32 9EH (Near Junction 7 of M60 Motorway •Was Junction 7 M63 Motorway). Our informal meetings start at 7 p.m. and finish at 11 pm. All welcome. Meetings are on the last Thursday of each month (except December). John/Sarah Gilpin – 0161 865 2872 (thegilpins@btopenworld.com)

————————————————-

SCOTTISH QL USERS GROUP

SQLUG meets at George Gwilt's home every second Sunday in the month. Please contact George Gwilt before coming, to get the location. Gdggler@gmail.com

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SOLENT SUBGROUP

Meetings are at Botley Market Hall, all welcome. Park at the back and use side entrance on the 1st Saturday of the month from 2.00 pm to 6.00 pm. Graham Evans - 023 8040 3350.

_____-

SURREY QUANTA SUBGROUP (SQSG)

The group is currently trying other venues in the Leatherhead - Epsom area. If you plan to attend but do not get our emails, please phone or email Ken Bain for the latest location. Meetings are 8.00 to 10.00 pm on the last Wednesday of each month except December. Ken Bain - 01932 347432 (to midnight), kenb@bcs.org.uk

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SUSSEX QL USER GROUP

Currently without a meeting place, anyone interested should contact Roy Wood - 01273 430501 or Keith Mitchell - 01903 742263.

WANT ADS

Wanted: Does anyone have the following games:

Fleet Tactical Command by Di-Ren?
Gumshoe Logic by Megacycal
Top Team by Arundel Software

Will happily pay for the games please contact Peter at
peetvanpeebles@yahoo.co.uk

_____-

LATE NEWS   Lee Privett

The next issue Volume 29, Issue 1 will be out end of February and with a slightly new look.

We will be watching with interest the new proposed introduction of the Stop Online Piracy Act (SOPA) and its Senate counterpart, the PROTECT IP Act (PIPA) in the USA as if it becomes law could have repercussions for everyone who has a website with links, and that includes QUANTA.

Watch this space

Lastly the family of the late Joan and Ernst Pratt who were fellow QL'ers, have allowed their game CatchJack to be given away free.

Brought to our attention on the QL forum and now available to download from Dilwyn's website here, http://www.dilwyn.me.uk/games/index.html, with a review next issue.